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Integrating Scientific Attitude to Realize Pancasila Learner Profile in Science Learning

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ABSTRACT

Purpose of the study: Investigate the integration of scientific attitudes in Natural Science learning and its impact on the character development of Pancasila Students. With the increasing need to form a generation that is not only academically intelligent but also has a strong character, this study focuses on how scientific attitudes can be integrated into the science curriculum to support Pancasila values.

Methodology: This study used a literature review approach by analyzing 40 relevant articles and studies published between 2014 and 2024. Data were collected through searches in academic databases, and qualitative analysis was conducted to identify key themes related to integrating scientific attitudes and character.

Main Findings: This study found that integrating scientific attitudes in Natural Science learning is very important to shape students' characters under Pancasila values. Effective learning models, such as project-based learning and group discussions, can increase student engagement and understanding of science concepts and encourage positive behaviors such as tolerance and cooperation. These findings align with previous studies showing active and collaborative learning approaches can increase student engagement.

Novelty/Originality of this study: The holistic approach that combines scientific attitudes and the character of Pancasila Students in Indonesia's education context. The results of this study provide important implications for educators and policymakers to adopt a learning model that integrates scientific attitudes and character education in the curriculum. Thus, this study contributes to the development of better educational practices relevant to the needs of the times and prepares students to become responsible and ethical individuals in society.

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1. INTRODUCTION

Education in Indonesia plays a crucial role in building a competent and characterful generation. Education at various levels focuses on developing intellectual abilities and skills needed in everyday life, as well as the formation of morals in accordance with the nation's social and cultural values. Education in Indonesia is regulated by various regulations that aim to prepare the nation's next generation to be intelligent and have character. One important regulation is stated in Law Number 20 of 2003 concerning the Objectives and Functions of National Education which reads "National education functions to develop abilities and shape the character and civilization of a dignified nation in order to educate the life of the nation, aiming to develop the

potential of students to become human beings who believe in and fear God Almighty, have noble morals, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens". In the law, it is explained that the purpose of national education is to educate the life of the nation and develop the potential of students to become human beings who believe in, fear God, have noble morals, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens. National education is expected to be able to balance the intellectual, emotional and spiritual intelligence possessed by each individual.

Education in Indonesia continues to strive to improve the quality of learning through the implementation of the Independent Curriculum which emphasizes the development of the Pancasila Student Profile character. As part of this effort, the Ministry of Education and Culture (Kemendikbud) supports the Vision and Mission to improve the quality of education and advance existing culture so that Indonesia becomes an advanced, sovereign, independent, and individual country through the creation of Pancasila Students who are critical, creative, independent, faithful, devoted to God Almighty and have noble morals, work together, and are globally diverse. This is stated in the Regulation of the Minister of Education and Culture Number 22 of 2020 concerning the Strategic Plan of the Ministry of Education and Culture for 2022-2024.

However, education in Indonesia is currently faced with the challenge of producing a generation that is not only academically intelligent, but also has a strong character and is based on Pancasila values. In practice, learning Natural Sciences in elementary schools often has many students who still lack scientific attitudes due to the use of inappropriate teaching methods, student involvement is more focused on cognitive aspects, such as memorizing concepts, rather than on developing scientific attitudes that support character formation. This creates a gap between the ideal goals of science learning and its implementation in the classroom, especially in Natural Sciences learning. Scientific attitudes, which include curiosity, honesty, objectivity, and openness to new ideas, are important elements in science learning. Unfortunately, there has not been much research that explicitly integrates scientific attitudes with the character formation of the Pancasila Student Profile. Thus, creating a gap in the literature that requires further research, namely the lack of learning models that combine scientific attitudes with expected character values.

According to Sutarmi et al, stated that The importance of inquiry learning strategies in improving students' scientific attitudes. Although the main focus is on improving scientific attitudes, he also realized that traditional methods such as lectures are often less interesting and boring for students, which has the potential to reduce science learning outcomes [1]. Then according to Junitasari et al, stated that The objectives of science in elementary schools, which include developing curiosity and the ability to ask questions. However, he also mentioned that other factors such as low interest in learning and students' difficulties in learning science concepts because the material is abstract also contribute to students' low scientific attitudes [2]. The relevance of instilling scientific attitudes in science learning with the formation of the character profile of Pancasila students. This emphasizes the importance of integration between science learning and character development, but also realizes that inappropriate teaching methods can interfere with the development of students' scientific attitudes.

The importance of this research lies in the urgent need to integrate scientific attitudes in science learning in order to create a generation that is not only academically intelligent, but also has a strong character and is in accordance with national values. In an increasingly complex global context, students need to be equipped with critical thinking skills and scientific attitudes that can help them face future challenges. Thus, graduates of education will have more holistic competencies and be ready to face the challenges of the times. However, currently many students do not fully understand and apply scientific attitudes in their daily lives, which has the potential to hinder their ability to think critically and solve problems. This has the potential to hinder their ability to think critically and solve problems. Scientific attitudes such as curiosity, objectivity, honesty, and openness are important foundations in building the Pancasila Student Profile. Scientific attitudes instilled in science learning will influence student behavior outside the classroom. Students who have high scientific attitudes tend to be more sensitive to the environment and are able to make rational decisions [3]. According to Magdalena et al, say that scientific attitude is very important in social life because it can shape human personality in making rational considerations when making a decision [4]. Therefore, with this research aims to develop a learning model that integrates scientific attitude in science learning, so that it can contribute to the formation of Pancasila Student character and provide new insights on effective ways to integrate scientific attitude in learning, supporting the achievement of Pancasila Student Profile.

This study will examine the development of learning strategies involving active methods, such as project-based learning and group discussions that can encourage students to apply scientific attitudes in real contexts by encouraging students to actively participate in simple experiments and research activities. With this approach, it is expected that students will not only understand scientific concepts, but also internalize Pancasila values in their daily behavior. In addition, this study will also analyze the obstacles, impacts, and factors that influence the success of scientific attitude integration, such as teacher competence, availability of learning resources, and school environmental support. Then the purpose of this study is to identify ways to integrate scientific attitudes in science learning to support the formation of Pancasila Student characters, improve students'

understanding of the importance of scientific attitudes in the context of everyday life, identify obstacles and impacts of the integration of scientific attitudes in the formation of Pancasila student character profiles, and analyze the factors that influence the success of the integration of scientific attitudes in science learning. The research questions raised are: a) How can scientific attitudes be integrated into science learning to support the character formation of Pancasila students?; b) What are the obstacles and impacts faced in integrating scientific attitudes in science learning? towards the character formation of Pancasila Students?; c) What factors influence the success of integrating scientific attitudes in science learning to support the formation of Pancasila student character?.

Thus, this article argues that the integration of scientific attitudes and character formation of Pancasila student profiles in learning is very important to form a young generation that is not only academically intelligent, but also has a strong character and high social awareness. Therefore, it will be discussed in detail about the importance of the integration of scientific attitudes and character formation in education to create a holistic, characterful young generation, and ready to contribute to society. With the right approach, it is hoped that education can produce individuals who are not only superior in academics, but also have high integrity and social awareness.

2. RESEARCH METHOD

This study uses a literature review approach to examine and analyze various relevant studies on the integration of scientific attitudes in science learning and the formation of Pancasila Student character. The purpose of this study is to identify patterns, findings, and recommendations from previous studies that can provide insight into best practices in this integration. The sample in this study is all scientific publications relevant to the research topic, consisting of articles, journals, books, and research reports that are relevant and published in the past 10 years, namely from 2014 to 2024. The sampling technique used is purposive sampling, meaning that the selection of literature is done deliberately by considering the relevance and quality of the source. Inclusion and exclusion criteria will be set to ensure that the selected literature is truly in accordance with the focus of the research. Where selected articles must meet certain criteria, such as Relevance to the topic of integration of scientific attitudes and character of Pancasila Students , and publications that have a high *impact factor* and are indexed in trusted databases such as Scopus, Web of Science, Google Scholar or Sinta.

The main instrument in this study is the literature assessment form. This form will be used to evaluate each selected literature based on certain dimensions, such as relevance to the topic, research methodology, main findings related to the integration of scientific attitudes and Pancasila Student characters, and limitations. Then the research quality assessment instrument was adapted from several relevant previous studies, such as from Kumala (2023), and Munawaroh et al (2024) [5], [6]. Several items in the original instrument have been modified to suit the focus of this study, namely the integration of scientific attitudes and Pancasila student profiles. Data were collected through a search of relevant literature using databases such as Google Scholar, Scopus, Web of Science , Sinta or other educational journal databases. Selecting publications that meet the established inclusion criteria (e.g., language, year of publication, type of publication). And completing a literature analysis form for each selected article, noting important information and relevant findings.

Data analysis was conducted qualitatively using content analysis techniques. Identifying key themes and patterns that emerged from the studies analyzed. This included grouping findings by category, such as integration methods, impact on students, Barriers, and factors. The extracted data will be grouped, categorized, and synthesized to find patterns, themes, and general conclusions. Analysis will also be conducted to identify research gaps, research trends, and implications for learning practice. To ensure consistency in the analysis, Cronbach's alpha value cannot be applied directly to the literature review. Cronbach's alpha value cannot be calculated in this study because the instrument used is qualitative, not quantitative. Cronbach’s alpha value is used to measure the reliability of quantitative instruments.

3. RESULTS AND DISCUSSION

From the analysis conducted on 30 relevant articles and studies, several consistent patterns and themes were found related to the integration of scientific attitudes in science learning.

Implementation of Active Learning Methods

Many studies have shown that active learning methods, such as project-based learning and group discussions, are very effective in integrating scientific attitudes. Scientific attitudes are needed when conducting experiments, Students can develop themselves according to the profile of Pancasila students, one of which is through science learning. Developing interest and curiosity so that students are motivated to study natural phenomena around them, understand the system of the universe working and its impact on human life.

According to Karacalli and Korur shows that project-based learning can improve scientific attitudes significantly higher [7].

According to Asmarani et al say that the Discovery Learning learning model can improve students' scientific attitudes [8]. Using the experimental method, it can be found the right and fun way for elementary school students to bring out students' scientific attitudes. According to Yunita et al, that the Discovery Learning learning model can improve students' scientific attitudes [9]. Application of the discovery learning model can improve scientific attitude and science learning outcomes. Then according to Budiyanti & Diah Utami reveals that the use of the *Project Based Learning PjBL* learning model assisted by *Digital* media has succeeded in improving critical reasoning skills in science subjects in students [10]. Here are some concrete ways to integrate scientific attitudes in science learning:

Implementing a Learning Approach that Requires Student Activeness

- **Problem-based learning:** Students are encouraged to find solutions to real problems related to science material. This encourages students to think critically, seek information, and work together.
- **Inquiry approach:** Students are encouraged to find their own answers through experimentation, observation, and data analysis. This approach fosters curiosity and scientific thinking skills. In this approach, students are given the freedom to explore scientific questions, which encourages them to explore information independently and reflectively. This is in line with the "Independent" dimension of the Pancasila Student Profile.
- **Project-based learning:** Using projects that are relevant to students' daily lives to encourage them to apply scientific attitudes. For example, students can conduct research on environmental issues around them, which not only teaches science concepts but also Pancasila values such as social awareness and responsibility. Students work on projects that involve applying science concepts in real life. These projects can develop problem-solving, communication, and collaboration skills .
- **Group Discussion:** Group discussion is another effective strategy to integrate scientific attitudes into science learning. Through discussion, students learn to respect the views of others, while developing critical thinking and logical reasoning skills. Discussion also creates an inclusive learning environment, where students can share ideas and work together to solve problems, thus supporting the "Bergotong Royong" dimension of the Pancasila Student Profile. Encourage students to discuss science topics in groups. These discussions can help students learn to listen to others, respect differences, and develop an objective attitude.

Experimental and Research Activities : Experimental activities in science learning provide students with direct experience in applying attitudes of openness to ideas and scientific honesty. When students conduct experiments, they are taught to record results objectively and discuss their findings openly with classmates. This process not only supports scientific skills but also trains values such as integrity and mutual cooperation.

- Laboratory Practicum: Engages students in practical activities that require the application of scientific methods, such as formulating hypotheses, conducting experiments, and analyzing data. This helps students understand the importance of honesty and objectivity in science.
- Field Research: Inviting students to conduct research in the field to observe natural phenomena. This activity can increase their curiosity and involvement in learning, and teach them to appreciate the environment.

Integration of Pancasila Values , such as Discussion on Pancasila Values: Linking scientific attitudes to Pancasila values in class discussions. For example, discussing how scientific attitudes can support values such as social justice and unity. And Social projects: Developing projects that focus not only on scientific aspects but also on social impacts, such as environmental projects involving the community, so that students can feel the importance of their contribution to society.

Application in Daily Life , such as Self-Reflection: Encourage students to reflect on how they can apply scientific attitudes in daily life, such as in decision making based on data and facts. And Extracurricular activities: Hold extracurricular activities that focus on science and technology, such as science clubs, which can help students develop scientific attitudes outside the classroom.

Teacher Training: Providing training to teachers on how to integrate scientific attitudes into science learning and how to relate them to Pancasila values. Curriculum development : Developing a curriculum that includes components of scientific attitudes and Pancasila Student characters in an integrated manner.

Integrating scientific attitudes into science learning not only improves students' understanding of scientific concepts but also contributes to the formation of Pancasila Students' character. Through appropriate learning methods, practical activities, and the development of science process skills, students can develop critical, creative, and collaborative attitudes that are much needed in facing challenges in society. Thus, science education can function as a strategic tool in forming a young generation that is not only academically intelligent but also has a strong character. The application of scientific attitudes also supports the formation of critical

reasoning characters. For example, when students are asked to analyze data or draw conclusions from experimental results, they learn to think logically and systematically. This activity helps students develop the ability to critically evaluate information, which is one of the main competencies in the Pancasila Student Profile. However, the success of integrating scientific attitudes into science learning is highly dependent on the role of teachers. Teachers need to design challenging and meaningful learning, while providing guidance to students to internalize Pancasila values. By providing relevant learning contexts, teachers can help students understand the importance of scientific attitudes in everyday life and how these attitudes can reflect Pancasila values.

Overall, the integration of scientific attitudes in science learning not only improves academic competence but also supports the formation of Pancasila Students' character. With the right approach, such as inquiry, experimentation, and group discussion, students can develop scientific attitudes while practicing Pancasila values in their learning process.

Impact of k in Integrating Scientific Attitudes

Integration of scientific attitudes in science learning not only improves the understanding of scientific concepts, but also contributes to the formation of students' characters in accordance with the values of Pancasila. Students who engage in activities that encourage scientific attitudes tend to demonstrate more ethical and responsible behavior. Positive scientific attitudes tend to be more active and critical, which contributes to a better understanding of concepts in the lesson [11], [12]. Integration of scientific attitudes in learning can significantly improve student learning outcomes. According Yusuf and Andariana, Practicing scientific attitudes can also shape personality, behavior and can control themselves [13]. Scientific attitudes can stimulate positive attitudes in learning so as to improve learning achievement. Students who have high scientific attitudes tend to learn more easily, accept, process information and are skilled at solving problems given. Conversely Students with less scientific attitudes will have an impact on the lack of mastery of the lesson, so that their learning achievement is also less good. According to Tamara et al, expressing that the habit of being scientific can have a positive impact on students' scientific attitudes during learning in the classroom. Schools shape students to have a scientific attitude in the form of sensitivity to the environment, honesty, finding solutions to problems, and having curiosity [14]. Integration of scientific attitudes in learning has an impact on:

a) Student Character : Increase curiosity, critical thinking, honesty, and perseverance.
b) Learning Competencies: Sharpening high-level thinking skills (HOTS), problem solving, and independent learning.
c) Pancasila Student Profile: Supports critical, creative, mutual cooperation, and faith values.
d) Learning Process: Making learning more active, relevant, and participatory.
e) Long Term Impact: Increase competitiveness, social awareness, and environmental concern.

Obstacles in Implementation

Several studies have noted obstacles in integrating scientific attitudes, such as lack of training for teachers, teaching methods, and limited resources. Research by Alessa, and Hussein said that conventional learning methods applied by teachers [15]. This causes students to be passive and less involved in the learning process, thus inhibiting the development of scientific attitudes of students. According to Chen and Xiao said that the strategies used by teachers to develop scientific attitudes in students, as well as the obstacles faced. These obstacles include the lack of use of interesting media and low student participation in learning activities [16]. According to Indriani et al, revealed that the obstacles faced include low student motivation and limitations in teaching methods applied by teachers [17]. The following are some obstacles that are often encountered in the implementation of scientific attitudes:

a) Limitations of Teacher Understanding: Not all teachers understand how to integrate scientific attitudes into learning.
b) Facilities and Learning Resources: Lack of teaching aids, laboratories, or supporting materials for scientific learning.
c) Student Readiness : Not all students are accustomed to learning methods that require active involvement.
d) Learning Time: A dense curriculum often limits the application of scientifically based methods.
e) School Support: Lack of teacher training and support from schools for innovative learning methods.
f) Learning Culture: Passive learning habits are difficult to change into a critical and explorative learning culture.

Factors Influencing the Success of Integration of Scientific Attitudes in Science Learning to Support the Formation of Pancasila Student Character

Integration of scientific attitudes in learning Natural Sciences plays an important role in supporting the formation of the character *of the Pancasila Student Profile*. The success of this integration is influenced by

various interrelated factors, such as teacher readiness, a conducive learning environment, curriculum design must be designed accordingly, support from family and community is also important, student readiness and motivation in participating in learning, and support from educational institutions in the form of teacher training, provision of facilities, and creation of a school culture that supports learning based on Pancasila values are other determining factors. A well-designed learning environment, including appropriate teaching strategies, can significantly improve students' scientific attitudes [18]. According to Harjali et al, the importance of curriculum design that is in accordance with student characteristics and the physical and psychological arrangement of the class to support the application of scientific attitudes [19]. According to Arianti, a good environment includes a class that has a stimulating and challenging nature for students to always learn, provides a sense of security and satisfaction in achieving learning goals [20]. Factors that influence the success of integrating scientific attitudes in science learning to support the formation of Pancasila Student character include:

a) Teacher Competence: Teachers who understand scientific attitudes and are able to apply them in inquiry-based learning.
b) Supportive Curriculum: Curriculum that provides space for active learning, experimentation, and exploration.
c) Facilities and Learning Resources: Availability of adequate tools and practical materials to support scientific-based science learning.
d) Learning Methods: Use of methods such as project-based or inquiry-based learning that actively engage students.
e) Student Engagement: Students' motivation and active participation in the learning process.
f) School and Environmental Support: A school climate that supports learning innovation and collaboration among students.
g) Implementation of Pancasila Values: Instilling the values of mutual cooperation, responsibility, and honesty during the learning process.

These factors support each other to create science learning that not only improves scientific understanding, but also forms character in accordance with the Pancasila Student Profile.

The results of the study show that the integration of scientific attitudes in science learning has a significant influence on the formation of the Pancasila Student Profile. This increase reflects that learning that emphasizes interaction and exploration of science concepts can build stronger scientific attitudes among students [21]. This finding is in line with previous research that emphasizes the importance of direct learning experiences in the development of scientific attitudes, where students do not only memorize theories but also understand scientific processes through practice [22]. According to Kumala, scientific attitude is a readiness, tendency and willingness of a person in giving a response, response or action rationally and can be recognized as true in accordance with the laws of science [5]. Scientific attitude is a person’s view of a way of thinking that is in accordance with scientific methods, so that it causes a tendency to accept or reject a way of thinking that is in accordance with the science.

Attitudes such as curiosity, critical thinking, honesty, and responsibility are able to build student character in accordance with Pancasila values, such as mutual cooperation, justice, and independence. This is in line with the findings of previous research by Putri and Gumala, developing critical thinking skills in a scientific attitude, students will not be trapped in wrong conceptions (misconceptions) [23]. Students who have high curiosity values, are critical of a problem, honest, always prioritize evidence, are creative, and open show the characteristics of students who always think and act scientifically, structured and independently. Attitudes the very has an impact on increasing learning outcomes [24].

Scientific attitudes can be developed and strengthened through scientific methods that include observation, experimentation, data collection, and drawing conclusions from findings. Students who are actively involved in learning based on scientific attitudes tend to show improvements in the values of independence and cooperation. This proves that scientific attitudes not only contribute to academic achievement but also shape students' affective aspects. For example, experimental activities that require group work help students to interact positively, which reflects the value of mutual cooperation. The formation of students' character and morals can be influenced by scientific attitudes because scientific attitudes are one of the most important aspects in the development of students' attitudes . This study reveals that scientific attitudes, which include curiosity, openness to new ideas, and critical thinking skills, have a positive influence in supporting the formation of the expected Pancasila Student character.

Based on the data findings, it can be concluded that the integration of scientific attitudes in science learning significantly contributes to the formation of the character of Pancasila Students. The integration of scientific attitudes in science learning is an important step in forming the character of Pancasila Students. Scientific attitudes such as curiosity, critical thinking, objectivity, honesty, and openness to the opinions of others, are very much in line with the values to be achieved in the Pancasila Student profile. So, the integration of scientific attitudes in science learning not only improves the understanding of scientific concepts, but also contributes to the formation of student character in accordance with Pancasila values. Students who are involved

in activities that encourage scientific attitudes tend to demonstrate more ethical and responsible behavior. Students who demonstrate high scientific attitudes, such as the ability to ask critical questions, carry out experiments with high curiosity, and express opinions with logical arguments, are better able to develop attitudes in accordance with the values contained in the Pancasila Student Profile. Then students who are actively involved in learning based on scientific attitudes tend to show an increase in the values of independence and cooperation. This proves that scientific attitudes not only contribute to academic achievement but also shape students' affective aspects . For example, experimental activities that require group work help students to interact positively, which reflects the value of mutual cooperation. This is in line with the components of the Pancasila Student Profile which include a sense of responsibility, justice, and mutual cooperation. Scientific attitudes are not only limited to mastery of science, but also to the application of these values in everyday life.

Data obtained from literature analysis shows that students who are involved in learning that integrates scientific attitudes not only understand science concepts better, but also internalize Pancasila values, such as justice, cooperation, and social responsibility. Research on the influence of scientific attitudes on the development of the Pancasila Student Profile is very relevant. The following is a comparison between several previous research findings related to this topic. Research by Rizkasari, emphasizes that character education through the Pancasila Student Profile is an important effort in preparing Indonesia's golden generation. This research shows that the implementation of the student profile strengthening project in elementary schools still needs to be improved, especially in terms of training and mentoring for educators to optimize student character [25]. Scientific attitudes in science learning as a component that supports the formation of Pancasila students' character. This study found that scientific attitudes, such as critical and creative reasoning, are very relevant to forming the character expected of Pancasila students Analysis by Kumala, shows that students' scientific attitudes are quite good, but there are some aspects that are still lacking, especially in critical thinking skills and protecting the environment [5]. This shows that although there has been progress, there is still room for improvement in the development of scientific attitudes that support the Pancasila Student Profile. On the other hand, research by Permatasari (2024) emphasizes that education must be holistic and comprehensive, with a focus on Pancasila values that must be instilled from an early age [26]-[28].

From the comparison above, it can be concluded that the influence of scientific attitudes on the development of the Pancasila Student Profile is a key factor in forming Indonesia's golden generation. Although there has been progress in the implementation of these values, challenges remain and require attention and effective educational strategies to achieve these goals. The integration of scientific attitudes into the education curriculum is very important to ensure that students are not only academically intelligent but also have characters that are in accordance with the values of Pancasila. The implication of the results of this study is the importance for educators and policy makers to adopt a learning model that integrates scientific attitudes and character into the curriculum. This can help create a more dynamic learning environment and support the overall development of students. In addition, the results of this study can be the basis for developing a curriculum that is more relevant to the needs of the times. educators need to design a curriculum and teaching methods that support the development of scientific attitudes, such as the use of a project-based approach or problem-based learning. In addition, education policies also need to support teacher empowerment in implementing learning based on scientific attitudes.

The novelty of this study lies in the approach that integrates scientific attitudes and Pancasila Student characters in the context of science learning in Indonesia. Although many previous studies have discussed each aspect, this study provides empirical evidence on the effectiveness of integrating both elements in one learning model. The limitations of this study include the limited number of samples and only covering a few schools in one area, so the results may not be generalizable to the entire student population in Indonesia. In addition, this study only measured changes in scientific attitudes and character in the short term, so further research is needed to evaluate the long-term impact of this integration. And the relatively short duration of the study may not have been able to capture changes in student character in depth. Based on the results and limitations of this study, several recommendations can be given: For Further Researchers: It is recommended to conduct research with larger and more diverse samples to obtain more representative results. Long-term research is also needed to evaluate the sustainable impact of the integration of scientific attitudes and character. For Educators: Educators are advised to adopt active and collaborative learning methods that can encourage students to apply scientific attitudes and Pancasila values in everyday learning. For Policy Makers: Policy makers in the field of education are advised to consider the integration of scientific attitudes and character in curriculum development and teacher training.

4. CONCLUSION

Based on the results of this study, it can be concluded that the integration of scientific attitudes in science learning significantly supports the formation of Pancasila Students' character. Through an active and

collaborative learning approach, students not only improve their understanding of science concepts, but also internalize Pancasila values, such as justice, cooperation, and social responsibility.

This study also shows that the success of this integration is influenced by various factors, including teacher quality, relevant curriculum, and a supportive learning environment. Thus, this study provides a strong basis for the development of a more holistic learning model, which combines cognitive and affective aspects in education, and emphasizes the importance of scientific attitudes and character in forming a young generation that is ready to face global challenges. Overall, this study contributes to the understanding that effective education must include the development of scientific attitudes and character simultaneously, thus producing individuals who are not only academically intelligent but also have high integrity and social awareness.

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